Curriculum Vitae

Charles N. Long
Senior Research Scientist
University of Colorado and
NOAA Earth System Research Laboratory
Boulder, Colorado, USA

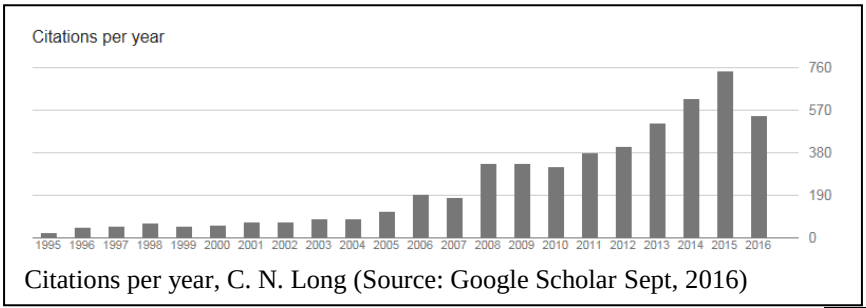
Biography

Charles N. Long specializes in the study of clouds and their effect on the surface radiation energy balance of the Earth-atmosphere system. His research interests include observation, quantification, and analyses of the surface radiative energy budget, quantification of cloud macro-physical properties from surface-based measurements, and cloud forcing and feedbacks with respect to surface radiation. Toward these ends, he has developed a widely used algorithm for automated quality assessment of surface radiation budget data (e.g. the QCRad code currently used by several surface radiation networks), and pioneered the development of techniques to infer cloud properties using surface radiometer and meteorological measurements. These techniques are applied to available surface measurements to assess climatological statistics and trend detection related to climate change. These methodologies and algorithms thus maximize the quality of basic and retrieved products from BSRN-type surface radiation measurement systems, and produce value-added parameters that increase the value of surface radiation measurements well beyond the measurements themselves. Other areas of interest include the development of surface-based instrumentation and systems for measuring cloud and radiative properties, and observational field campaigns, where Dr. Long has a long history of participation and leadership.

Dr. Long was awarded the 2000 *Professor Dr. Vilho Vaisala Award* in Atmospheric Sciences by the World Meteorological Organization in recognition of a collaborative paper, "Ground-based Remote Sensor Observations during PROBE in the Tropical Western Pacific," published in the February 1999 issue of the *Bulletin of the American Meteorological Society* and again awarded the 2012 *Professor Dr. Vilho Vaisala Award* in Atmospheric Sciences in recognition of the collaborative paper "Optimized fractional cloudiness determination from five ground-based remote sensing techniques," published in the December 2010 issue of the *Journal of Geophysical Research.* Dr. Long is to date the only two-time winner of the Vaisala Award in Atmospheric Sciences.

Dr. Long participates in national and international committees, boards, and advisory groups. He was recently appointed to the International Radiation Commission (IRC) Global Energy Balance Working

Group and is on the Editorial Advisory Boards of *The Open Atmospheric Science Journal* and *The Open Ocean Engineering Journal*. He currently serves as the World Meteorological Organization's (WMO) international Baseline Surface Radiation Network (BSRN) Project Manager. He is an invited co-author for the WMO Global Energy and Water Cycle Experiment (GEWEX) Radiative Flux Assessment chapter on surface observations and an invited member of the IASOA (International Arctic Systems for Observing the Atmosphere) Surface Radiation Balance Working Group.



Citations per year, C. N. Long (Source: Google Scholar Sept, 2016)

As of September 2016, Dr. Long has published 90 papers in peer-reviewed atmospheric science journals, 27 technical reports, and several hundred conference talks, proceedings, and posters. Dr. Long's published body of work has been cited 5374 times producing an H-index of 35, with an i10-index of 80. The H-index and i10-index are based on the number of times his work has been cited in other publications. This data is gathered from *Google Scholar*.

Information Source	Citations
Google Scholar	5374

Education

- Ph.D. in Meteorology, Penn State University – May 1996
- B.S. in Meteorology, with High Distinction, Penn State University – December 1991
- A.A., Letters, Arts, and Sciences, with Distinction, Penn State University – December 1989

Atmospheric Science Work Experience

- 2015 - present — Senior Research Faculty with the Cooperative Institute for Research in Environmental Sciences (CIRES) and NOAA Earth System Research Laboratory (ESRL) Global Monitoring Division (GMD)
- 1999 - 2014 — Senior Research Scientist with Pacific Northwest National Laboratory
- 2000 – 2014 — Site Scientist for the Department of Energy (DOE) Atmospheric Radiation Measurement (ARM) Tropical Western Pacific Program.
- 2004 – 2005 — Group Lead for the Fundamental and Computational Division's Climate Physics Group.
- 2001 - 2007 — ARM Lead Science Translator, and Science Translator for the ARM Radiative Processes Working Group.

- Oct. - Nov. 2003 Visiting Professor, Universitat de Girona, Girona, Spain.
- July 1998 - Dec. 1999 Research Associate with Penn State Univ. and Associate Site Scientist for the ARM Tropical Western Pacific Program
- Aug. 1996 - July 1998 Research Scientist with Univ. of Colorado - CIRES and NOAA/ARL/Surface Radiation Research Branch
- 1994 - May 1996 Graduate Research Assistant, Penn State University Meteorology
- 1992 - 1994 NASA Space Grant Research Fellow, Penn State University Meteorology

Awards

- 2000 *Professor Dr. Vilho Vaisala Award* in Atmospheric Sciences in recognition of the paper, "Ground-Based Remote Sensor Observations during PROBE in the Tropical Western Pacific."
- 2012 *Professor Dr. Vilho Vaisala Award* in Atmospheric Sciences in recognition of the paper, "Optimized fractional cloudiness determination from five ground-based remote sensing techniques."

Experience

Current Positions

- Project Manager for the WMO GDAP Baseline Surface Radiation Network (BSRN) (since 2015)
- Appointed Member of the ARM User Executive Committee (since 2015).
- Radiometry Expert for the ARM Aerial Facility (since 2008)
- Invited Chair of the ARM Instrument and Measurement Focus Group for Broadband Radiometric Measurements (since 2009)
- Invited Member Global Energy Balance Working Group of the International Radiation Commission (since 2010)
- Invited member of the IASOA (International Arctic Systems for Observing the Atmosphere) Surface Radiation Balance Working Group (since 2014)
- Editorial Advisory Board Member, *The Open Atmospheric Science Journal* (since 2010)
- Editorial Advisory Board Member, *The Open Ocean Engineering Journal* (since 2007)
- Member of the international World Meteorological Organization Baseline Surface Radiation Network (since 1998)
    - ARM representative to BSRN (since 2001)
    - Chair of the BSRN Cloud Parameters Working Group (since 2000)
    - Chair of the BSRN Cold Climate Issues Working Group (since 2008)
    - Member Committee on New Sites (since 2004)

- Member of various BSRN Working Groups (WGs) including the Pyranometers WG, Accuracy Specifications WG, Ocean Observations WG, and Data Quality Assessment WG (most since 2000)

Past Positions

- ARM Tropical Western Pacific Site Scientist (2000-2014)
- Member of the ARM Science Team Executive Committee (STEC) (2000–2008)
- Visiting Professor, Universitat de Girona, Spain (October–November 2003)
- ARM Lead Science Translator and Science Translator for the Radiative Processes Working Group (2001–2007)
- Associate TWP Site Scientist (1998–2000)
- Co-Chair of the ARM Radiative Processes Working Group (RPWG) and RPWG Steering Committee member (2001–2007)
  - Chair of RPWG Instrument Systems Focus Group (2001–2007)
- ARM Cloud Properties Working Group Steering Committee member (2001–2005 and 2007–2008)
  - Chair of the Cloud Properties Working Group 3D/Spatial Focus Group (2001–2005)
  - Chair of the Cloud Properties Working Group Instruments Focus Group (2007–2008)
- Leader and participant in the ARM/NOAA/NREL Ad-Hoc Group on Infrared Radiation Loss in Pyranometers (2003–2004)
- Invited member of the NSF Facilities Assessment subcommittee on *In-Situ* Surface and Surface-Atmosphere Exchange (ISSSAE) (2006–2008)
- Participant in the WMO Global Energy and Water Cycle Experiment Radiative Flux Assessment, Surface Sub-Group (since 2004-2012)
- Invited Co-Lead Author GEWEX Radiative Flux Assessment chapter on Surface Observations in 2010.
- CINDY/DYNAMO International Science Committee (since 2010-2014)
- Invited participant in the invitation-only International Workshop on Global Dimming and Brightening held in Ein Gedi, Israel (2008)
- Radiometry Expert for the PNNL Atmospheric Remote Sensing Laboratory (PARSL) system (2000-2014)
- Appointed to the Organizing Committee for the meeting on "Atmospheric Radiation Measurements and Applications to Climate" as part of the SPIE annual meeting, Seattle, Washington (July 7-11, 2002)

Instrument Development

Dr. Long's research interests include the development of instrumentation. The following are examples of his instrument development work and brief descriptions of the impact stemming from these efforts.

1. ***Developed the concept of a rotating shading arm for use with standard commercial pyranometers for measuring total and diffuse shortwave from a single instrument (1994–1996).*** This work led to collaboration with Dr. Mike Reynolds of Brookhaven National Laboratory (BNL) on development of a fast-rotating shadowband spectral instrument for retrieving aerosol optical depths on moving ships. The instrument—the Fast RSR—then became part of the BNL Portable Radiation Package for radiation measurements on ship deployments. It still is used today and has become part of the instrument suite of the new marine deployable Second ARM Mobile Facility (AMF2).

   Reference: Long CN, CF Pavloski, and TP Ackerman. 1996. "A Rotating Shadow Arm Broadband Solar Radiometer: Instrument Design and Concept Verification Using ARM SGP Radiometer Measurements." In *Proceedings of the 6th Atmospheric Radiation Measurement Science Team Meeting*, March 4-7, 1996, San Antonio, Texas. DOE CONF-9603149.

2. ***Invented the Hemispheric Sky Imager and associated fractional sky cover retrieval methodology/software (1996–1998).*** Through a collaboration funded by a Small Business Innovation Research (SBIR) grant from the United States Department of Agriculture (USDA), this concept was developed into a commercial instrument (the Total Sky Imager, or TSI) with Yankee Environmental Systems (1997–1999). The TSI is now the most prevalent commercially-available sky imaging system used in the atmospheric sciences community.

   Reference: Long CN and JJ DeLuisi. 1998. "Development of an Automated Hemispheric Sky Imager for Cloud Fraction Retrievals." *10th Symposium on Meteorological Observations and Instrumentation*, January 11-16, 1998, Phoenix, Arizona, pp.171-174. American Meteorological Society.

3. ***Developed the concept of a Rapid Sampling Scanning Infra-Red Thermometer (IRT) and associated screening methodology and software (2002–2003)*** as a means of obtaining discrete cloud base and clear-sky brightness temperatures, which improved the then-current standard practice of using 1-minute averages that produced a value composed of an unknown mixture of multi-layer cloud and clear-sky (a poor man's cloud ceilometer). In 2005, ARM adapted the concept of rapid sampling of the IRT.

4. ***Collaborated with John Wood (Peak Design Ltd, United Kingdom), inventor of the Delta-T Devices model SPN-1 total/diffuse shortwave radiometer, on field trials and analyses that led to the commercial production of the instrument (2006–2007).*** This was followed up by development of a modified bottom-mounted connector design for aircraft deployments (2009). Recently, collaborated in development of Dr Long's idea, based on analysis of Routine AAF CLOWD Optical Radiative Observations (RACORO) data, for a modified, unshaded SPN-1 for aircraft where rapid response times are highly desirable (2010). Two of these new unshaded instruments have been produced and tested and have become part of the radiation package for the ARM Aerial Facility G-1 aircraft.

   Reference: Long, CN. 2014. "Informal Preliminary Report on Comparisons of Prototype SPN-1 Radiometer to PARSL Measurements." *PNNL Technical Report PNNL-23411*, pp 15, available at http:\\www.pnnl.gov.

Field Campaigns

Dr. Long's participation in field measurement activities includes 27 past and present field campaigns. Dr. Long's service includes leadership roles as Principal Investigator on seven campaigns, Co-Investigator on five campaigns, and the On-site Lead Scientist for two campaigns. Additionally, he served as the Radiometry Expert for the RACORO and TWP-ICE campaigns and as the On-site Scientist for the ARM Program's first field campaign, the Pilot Radiation Observation Experiment (PROBE), held in conjunction with TOGA-COARE.

- On-site Scientist for ARM PROBE, in conjunction with TOGA-COARE Campaign, Kavieng, Papua New Guinea (1993)
- On-site Lead Scientist for ARM Combined Sensor Probe Experiment, Manus, Papua New Guinea (1996)
- Participant in Cooperative Atmosphere Surface Exchange Study (CASES) '97, Oklahoma, USA (1997)
- Participant in Fall 1997 Cloud IOP, Oklahoma, USA (1997)
- On-site Lead Scientist for ARM Nauru99 Campaign, Nauru (1999)
- Participant in Spring Cloud IOP, Oklahoma, USA (2000)
- Participant in ARM Enhanced Shortwave Experiment (ARESE) II IOP, Oklahoma, USA (2000)
- Participant in Improvement of Microphysical PaRameterization through Observational Verification Experiment (IMPROVE), PARSL deployment, Washington, USA (2001)
- Participant in Improvement of Microphysical PaRameterization through Observational Verification Experiment 2 (IMPROVE II), PARSL deployment, Oregon, USA (2001–2002)
- PI for Nauru Island Effect Study (NIES), Nauru (2001–2003)
- Participant in Cirrus Regional Study of Tropical Anvils and Cirrus Layers-Florida Area Cirrus Experiment (CRYSTAL-FACE), PARSL deployment, Florida, USA (2002)
- PI for Cloudiness Inter-Comparison (CIC) IOP, Oklahoma, USA (2003)
- Participant in the Mixed-Phase Arctic Cloud Experiment (M-PACE), PARSL deployment, Alaska, USA (2004)
- Co-I in the ATQ Boundary Layer Cloud IOP, Alaska, USA (2005)
- Lead Scientist for Surface Radiation Measurements as part of the Tropical Warm Pool-International Cloud Experiment (TWP-ICE) (2006)
- Co-I for NSA Pyranometer IR Loss Study, Alaska, USA (2006–2007)
- Participant in the Cumulus Humilis Aerosol Processing Study (CHAPS), Oklahoma, USA (2007)
- Participant in COPS–Initiation of Convection and the Microphysical Properties of Clouds in Orographic Terrain, Germany (2007)
- Participant in NSA Evaluation of Heated Ventilators in the Arctic campaign, Alaska, USA (2007–2009)

- Co-I for Routine AAF CLOWD Optical Radiative Observations (RACORO), Oklahoma, USA (2009)
- PI for Darwin ACRF Representativeness Experiment (DARE), Darwin, Australia (2009–2011)
- Co-I for the Storm Peak Lab Cloud Property Validation Experiment (STORMVEX), Colorado, USA (2010–2011)
- PI for Thunderhead Radiative Flux Analysis Campaign (with StormVex), Colorado, USA (2010–2011)
- PI for ACRF MJO Investigation Experiment on Manus (AMIE-Manus), Manus, Papua New Guinea (2011–2012)
- PI for ARM MJO Investigation Experiment on Gan (AMIE-Gan), Gan Island, Maldives (2011–2012)
- Co-I for Dynamics of the MJO (DYNAMO) campaign, Indian Ocean area (2011–2012).
- PI for the Manus Variability Study campaign on Manus, Papua New Guinea (2011–2013)

Invited Talks

2014

Atmospheric Systems Research Spring PI Meeting, Potomac, MD March 9 – 13, 2014. CN Long. " A Review of ARM Tropical Western Pacific Research Highlights."

Asia Oceania Geosciences Society 11th Annual Meeting, Sapporo, Japan July28 – Aug.1, 2014. CN Long. "The ARM Program in the Tropical Western Pacific: Over a Decade of Observations and Science."

2013

University of Washington, Dept of Atmospheric Science, Seattle, WA Oct. 7, 2013. CN Long, J Flaherty, and SA McFarlane. "A Climatology of Surface Radiation, Cloud Cover, and Cloud Radiative Effects for the ARM Tropical Western Pacific Sites."

2008

International Workshop on Global Dimming and Brightening, Ein Gedi, Israel Feb. 10-14, 2008. CN Long, G König-Langlo, M Wild, DD Turner, J Barnard, and TP Ackerman. "Investigating the Causes of Solar Radiation Trends: an Example from the Antarctic Georg von Neumayer BSRN Site."

Tenth Baseline Surface Radiation Network (BSRN) Scientific Review and Workshop, July 7-11, 2008 Koninklijk Nederlands Meteorologisch Instituut (KNMI), De Bilt, Kingdom of the Netherlands. CN Long. "Brief report on the Global Dimming then Brightening (GDB) Workshop."

2007

European Geosciences Union (EGU) General Assembly April 16-20, 2007, Vienna, Austria. CN Long, JC Barnard, KL Gaustad, DD Turner, TP Ackerman. "Determination of Cloud Properties and the Complete Net Surface Radiative Cloud Forcing from Surface Radiation Measurements."

MeteoSwiss, Federal Office of Meteorology and Climatology, April 18-20, 2007, Payerne, Switzerland. CN Long, JC Barnard, KL Gaustad, DD Turner, and TP Ackerman. "Determination of

Cloud Properties and the Complete Net Surface Radiative Cloud Forcing from Surface Radiation Measurements."

University of Oregon, May 11, 2007, Eugene, Oregon. CN Long. "A general overview of the Earth's radiative energy budget, including the greenhouse effect."

Oregon State University, May 10, 2007, Corvallis, Oregon. CN Long, JC Barnard, KL Gaustad, DD Turner, and TP Ackerman. "Determination of Cloud Properties and the Complete Net Surface Radiative Cloud Forcing from Surface Radiation Measurements."

2006

Institute of Electrical & Electronics Engineers (IEEE) 2006 International Geoscience and Remote Sensing Symposium, July 31-August 4, 2006, Denver, Colorado. CN Long, JC Barnard, KL Gaustad, DD Turner, and TP Ackerman. "Basic Cloud Properties and Cloud Effects Derived from Surface Radiation Measurements."

Howard University, October 2006. CN Long, TP Ackerman, KL Gaustad, JC Barnard, and DD Turner. "The Effects of Clouds on the Surface Radiative Energy Budget."

2005

National Aeronautics and Space Administration (**NASA) CERES Science Team Meeting, November 1-3, 2005, Hampton, Virginia**. CN Long, TP Ackerman, KL Gaustad, JC Barnard, and DD Turner. "Inferring Cloud Properties and Cloud Effects from BSRN-style Surface measurements."

American Geophysical Union (AGU) Fall Meeting, December 5–9, 2005, San Francisco, Californa. Session B10: Impacts of Clouds and Aerosols on Terrestrial Carbon and Hydrological Cycles (ICATCH). CN Long, TP Ackerman, KL Gaustad, JC Barnard, and DD Turner. "The Nature of Clouds and Their Effects on the Surface Radiative Energy Budget."

Publications

Journal Articles

Augustine JA, JJ DeLuisi, and CN Long. 2000. "SURFRAD - A National Surface Radiation Budget Network for Atmospheric Research." *Bulletin of the American Meteorological Society* 81: 2341-2357. DOI: 10.1175/1520-0477.2000.081<2341:SANSRB>2.3.CO;2.

Augustine JA, CR Cornwall, GB Hodges, CN Long, CI Medina, and JJ DeLuisi. 2003. "An automated method of MFRSR calibration for aerosol optical depth analysis with application to an Asian dust outbreak over the United States." *Journal of Applied Meteorology* 42(2): 266-278.

Badosa, J., J. Calbó, R. Mckenzie, B. Liley, J-A. González, B. Forgan, and C.N. Long (2014): Two Methods for Retrieving UV Index for All Cloud Conditions from Sky Imager Products or Total SW Radiation Measurements, *Photochemistry and Photobiology*, 90: 941–951. doi: 10.1111/php.12272.

Badosa, J., J. Wood, P. Blanc, C.N. Long, L. Vuilleumier, D. Demengel, and M. Haeffelin (2014): Solar irradiances measured using SPN1 radiometers: uncertainties and clues for development, *Atmos. Meas. Tech.*, 7, 4267–4283, 2014, doi:10.5194/amt-7-4267-2014.

Barnard, JC and CN Long. 2004. “A Simple Empirical Equation to Calculate Cloud Optical Thickness Using Shortwave Broadband Measurement.” *Journal of Applied Meteorology* 43(7): 1057-1066.

Barnard JC, CN Long, EI Kassianov, SA McFarlane, JM Comstock, M Freer, and GM McFarquhar. 2008. “Development and Evaluation of a Simple Algorithm to Find Cloud Optical Depth with Emphasis on Thin Ice Clouds.” *The Open Atmospheric Science Journal* 2: 46-55. DOI: 10.2174/1874282300802010046.

Berg, L. K., E. I. Kassianov, C. N. Long, and D. L. Mills, Jr. 2011. "Surface summertime radiative forcing by shallow cumuli at the Atmospheric Radiation Measurement Southern Great Plains site." *Journal of Geophysical Research* 116: D01202, doi:10.1029/2010JD014593.

Boers, R., M. J. de Haij, W. M. F. Wauben, H. K. Baltink, L. H. van Ulft, M. Savenije, and C. N. Long. 2010. “Optimized fractional cloudiness determination from five ground-based remote sensing techniques.” *Journal of Geophysical Research* 115: D24116, doi:10.1029/2010JD014661.

Burleyson, C.D., C.N. Long, and J.M. Comstock (2014): Quantifying Diurnal Cloud Radiative Effects by Cloud Type in the Tropical Western Pacific, *Journal of Applied Meteorology and Climatology*, 54, 1297-1312, doi:10.1175/JAMC-D-14-0288.1.

Cess, RD, MH Zang, P Minnis, L Corsetti, EG Dutton, BW Forgan, DP Garber, WL Gates, JJ Hack, EF Harrison, X Jing, JT Kiehl, CN Long, JJ Morcrette, GL Potter, V Ramanathan, B Subasilar, CH Whitlock, DF Young, and Y Zhou. 1995. “Absorption of Solar Radiation by Clouds: Observations Versus Models.” *Science* 267: 496-499.

Ciesielski, P. E., H. Yu, R. H. Johnson, K. Yoneyama, M. Katsumata, C. N. Long, J. Wang, S. M. Loehrer, K. Young, S. F. Williams, W. Brown, J. Braun, and T. Van Hove. 2013. “Quality-Controlled Upper-Air Sounding Dataset for DYNAMO/CINDY/AMIE: Development and Corrections.” *Journal of Atmospheric and Oceanic Technology*, 31:741–764, DOI: 10.1175/JTECH-D-13-00165.1.

Costa-Surós, M., J. Calbó, J.A. González, and C.N. Long. 2014. “Comparing the cloud vertical structure derived from several methods based on measured atmospheric profiles and active surface measurements.” *Atmos. Meas. Tech.*, 7: 2757-2773, doi:10.5194/amt-7-2757-2014.

Cox, C.J., T. Uttal, C.N. Long, M.D. Shupe, R.S. Stone, and S. Starkweather (2016): The Role of Springtime Arctic Clouds in Determining Autumn Sea Ice Extent, *Journal of Climate*, Ref.: JCLI-D-16-0136, Accepted Jun 13, 2016.

Creekmore, T. N., E. Joseph, and C. N. Long (2014): Quantifying Aerosol Direct Effects from Broadband and Spectral Irradiance Observations, *Journal of Geophysical Research*, 119, 5464–5474, DOI: 10.1002/2013JD021217.

de Boer G, WD Collins, S Menon, and CN Long. 2012. "Using Surface Remote Sensors to Derive Radiative Characteristics of Mixed-Phase Clouds: An Example from M-PACE." *Atmospheric Chemistry and Physics* 11:11937-11949. doi:10.5194/acp-11-11937-2011.

de Boer, G., Palo, S., Argrow, B., LoDolce, G., Mack, J., Gao, R.-S., Telg, H., Trussel, C., Fromm, J., Long, C. N., Bland, G., Maslanik, J., Schmid, B., and Hock, T. (2016): The Pilatus unmanned aircraft system for lower atmospheric research, *Atmos. Meas. Tech.*, 9, 1845-1857, doi:10.5194/amt-9-1845-2016, 2016.

Deng, M., P. Kollias, Z. Feng, C. Zhang, C. N. Long, H. Kalesse, A. Chandra, V. V. Kumar, and P A. Protat 2014. “Stratiform and Convective Precipitation Observed by Multiple Radars during the DYNAMO/AMIE Experiment.” *Journal of Applied Meteorology and Climatology*, 53, Issue 11, pp. 2503-2523.doi:10.1175/JAMC-D-13-0311.1.

Dong X, P Minnis, TP Ackerman, EE Clothiaux, GG Mace, CN Long, and JC Liljegren. 2000. “A 25-Month Database of Stratus Cloud Properties Generated from Ground-Based Measurements at the

Atmospheric Radiation Measurement Southern Great Plains Site." *Journal of Geophysical Research* 105(D4): 4529-4537.

Dong X, B Xi, K Crosby, CN Long, RS Stone, and MD Shupe. 2010. "A 10-yr Climatology of Arctic Cloud Fraction and Radiative Forcing at Barrow, Alaska." *Journal of Geophysical Research* 115: D17212. DOI:10.1029/2009JD013489.

Dong, X, B. J. Zib, B. Xi, R. Stanfield, Y. Deng, X. Zhang, B. Lin, and C. N. Long. 2013. "Critical Mechanisms for the Formation of Extreme Arctic Sea-Ice Extent in the Summers of 2007 and 1996." *Climatic Dynamics*, DOI:10.1007/s00382-013-1920-8

Dupont JC, M Haeffelin, Y. Morille, J. M. Comstock, C. Flynn, C. N. Long, C. Sivaraman, and R. K. Newson. 2011. "Cloud properties derived from two lidars over the ARM SGP site." *Geophysical Research Letters* 38, L08814, doi:10.1029/2010GL046274.

Dupont JC, M Haeffelin, and CN Long. 2009. "Cirrus cloud radiative effect on surface-level shortwave and longwave irradiances at regional and global scale." *Atmospheric Chemistry and Physics Discussions* 9: 1-56.

Dupont JC, M Haeffelin, and CN Long. 2008. "Evaluation of cloudless-sky periods detected by shortwave and longwave algorithms using lidar measurements." *Geophysical Research Letters* 35(10) doi:10.1029/2008GL033658.

Dutton EG, A Farhadi, RS Stone, CN Long, and DW Nelson. 2004. "Long-term variations in the occurrence and effective solar transmission of clouds as determined from surface-based total irradiance observations." *Journal of Geophysical Research* 109: D03204. DOI:10.1029/2003JD003568.

Gan, C.-M., Pleim, J., Mathur, R., Hogrefe, C., Long, C. N., Xing, J., Roselle, S., and Wei, C. 2014). "Assessment of the effect of air pollution controls on trends in shortwave radiation over the United States from 1995 through 2010 from multiple observation networks." *Atmospheric Chemistry and Physics*, 14: 1701-1715, doi:10.5194/acp-14-1701-2014.

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Hagos S., Z. Feng, C. D. Burleyson, K-S. S. Lim, C. N. Long., D. Wu, and G. Thompson. 2014. "Evaluation of convection-permitting model simulations of cloud populations associated with the Madden-Julian Oscillation using data collected during the AMIE/DYNAMO field campaign." *Journal of Geophysical Research-Atmospheres*, 119, 12,052–12,068, doi:10.1002/2014JD022143.

Kanniah KD, J Beringer, NJ Tapper, and CN Long. 2010. "Aerosols and their influence on radiation partitioning and productivity in northern Australia." *Theoretical and Applied Climatology* 100(3-4): 423-438. DOI 10.1007/s00704-009-0192-z.

Kassianov, E., J. Barnard, L. K. Berg, C. N. Long, and C. Flynn. 2011. "Shortwave spectral radiative forcing of cumulus clouds from surface observations." *Geophysical Research Letters* 38, L07801, doi:10.1029/2010GL046282.

Kassianov, E., J. C. Barnard, L. K. Berg, C. Flynn, and C. N. Long. 2011 "Sky cover from MFRSR observations", *Atmos. Meas. Tech.*, 4, 1463-1470, doi:10.5194/amt-4-1463-2011, 2011.

Kassianov E, CN Long, and J Christy. 2005. "Cloud Base Height Estimation from Paired Ground-based Hemispherical Observations." *Journal of Applied Meteorology* 44(8): 1221-1233.

Kassianov E, CN Long, and M Ovtchinnikov. 2004. "Cloud Sky Cover versus Cloud Fraction: Whole-Sky Simulations and Observations." *Journal of Applied Meteorology* 44(1): 86-98.

Kishcha P, B Starobinets, O Kalashnikova, CN Long, and P Alpert. 2009. “Variations of meridional aerosol distribution and solar dimming.” *Journal of Geophysical Research* 114:D00D14. DOI:10.1029/2008JD010975.

Kishcha, P., Starobinets, B., Long, C.N., and Alpert, P. (2012). “Unexpected increasing AOT trends over north-west Bay of Bengal in the early post-monsoon season.” *Journal of Geophysical Research*, 117, D23208, doi:10.1029/2012JD018726.

Kishcha, P., A.M. da Silva, B. Starobonets, C.N. Long, O. Kalashnikova, and P. Alpert (2015): “Saharan dust as a causal factor of hemispheric asymmetry in aerosols and cloud cover over the tropical Atlantic Ocean”. International Journal of Remote Sensing (IJRS), 36:13, 3423-3445, DOI: 10.1080/01431161.2015.1060646.

Long CN and TP Ackerman. 1995. “Surface Measurements of Solar Irradiance: A Study of the Spatial Correlation between Simultaneous Measurements at Separated Sites.” *Journal of Applied Meteorology* 34: 1039-1046.

Long CN and TP Ackerman. 2000. “Identification of Clear Skies from Broadband Pyranometer Measurements and Calculation of Downwelling Shortwave Cloud Effects.” *Journal of Geophysical Research* 105(D12): 15609-15626.

Long CN, JM Sabburg, J Calbo, and D Pages. 2006. “Retrieving Cloud Characteristics from Ground-based Daytime Color All-sky Images.” *Journal of Atmospheric and Oceanic Technology* 23(5): 633-652.

Long CN, JM Sabburg, J Calbo, and D Pages. 2006. “Papers of Note: Retrieving Cloud Characteristics from Ground-based Daytime Color All-sky Images.” *Bulletin of the American Meteorological Society* 87(6): 743-744.

Long CN, TP Ackerman, KL Gaustad, and JNS Cole. 2006. “Estimation of fractional sky cover from broadband shortwave radiometer measurements.” *Journal of Geophysical Research* 111: D11204, DOI:10.1029/2005JD006475.

Long CN and Y Shi. 2008. “An Automated Quality Assessment and Control Algorithm for Surface Radiation Measurements.” *The Open Atmospheric Science Journal* 2: 23-37. DOI: 10.2174/1874282300802010023.

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